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On the method of Spinning the Cocoon in a certain species of the Ichneumonidæ. See Pl. VIII.

By M. W. VAN DENBURG, A.M., M.D., Fort Edward, N. Y.

The larva on which there was already one set of cocoons when captured, belonged, apparently, to the Sphingidæ, was a little over two inches long, and had a crop of twenty-five or thirty cocoons already scattered along its sides. It probably fed on a frost grape vine, where it was captured.

Two or three days subsequent to its capture, a fresh crop of parasites were discovered pushing their way into the outside world.

When this was first observed, all the stages were in progress—from boring beneath the skin to half woven cocoons. Subsequently many others appeared, and the whole stage from beginning to end was carefully watched.

At first the little white, semi-translucent worms could be seen working their way up from the deeper layers toward the surface of the opaque green of the host's tissues. When finally they reached the surface, immediately beneath the outer skin, by continual pressure of a sharp, but soft-pointed head, and so far as

could be seen, by no gnawing or eating force, they finally succeeded in pushing through a very minute extremity.

This soon began to fill and enlarge by distention from within, as if the liquid contents were being forced into it from beneath the surface. When far enough advanced above the surface a distinct wriggling motion could be perceived. Finally, when free or nearly free, the process of spinning the cocoon began.

Bending over sidewise until the head of the little white grub touched the surface of its host, close to where the least fraction of its body still remained fastened in the hole whence it had emerged, the head begins to bob up and down, and from side to side, with a ceaseless regularity. With the naked eye this is all that can be seen, but under a glass enlarging four or five diameters, a very fine web is seen extending from the mouth; soon a fine open-meshed net begins to arise about the base and gradually increase in height. Each time the worm only touches the edge of the structure, which does not wholly surround the body, but reaches only a little more than half its circumference. Finally, the meshes are brought up to the full height of the erect grub and roofed in as high as it can reach

The next step is not in all cases the same. Sometimes the open side is closed down to near the middle of the body, but more often the worm turns end for end, and begins industriously to spin the white opaque cocoon from the bottom. This it does by the same constant motion, bending to near the middle of the body with each sweep of the head and carrying it to the full length of extension. Soon the strokes grow shorter, the little creature is wholly immeshed and it turns round and round, up and down, changes ends again and again, until it can no longer be seen. Finally, after the inner glazing has been applied, it at lasts ceases its perpetual motion and passes into a well-earned sleep.

The cocoon will now be found slightly attached to the surface of the host by the loose meshes before described, and it may be removed with very little force.

Some variations from the above should be mentioned. Occasionally a grub will begin to spin the open meshes about himself by the time he has only half emerged into the outer world. The two processes then go on simultaneously. Again, another will not begin this work of spinning until wholly free from the hole through which it has forced its way. In this case it sometimes

falls to the surface on which the host rests, and having no method of locomotion, begins to spin its cocoon where it chances to fall. This it can do as well lying on its side as when standing on end; only in the former case it passes the head from side to side, over the body, instead of up and down, as when perpendicular.

As to the time occupied in the various stages—from five to eight minutes elapse after the worm is first discovered beneath the skin until the small rounded head is seen above the surface of the skin. Not far from ten minutes are consumed in fully freeing the body, while the cocoon spinning goes on visibly for at least half an hour, and probably continues twice to four times as long in the privacy of its own chamber.

The first crop, the one upon the pupa when captured, hatched in about one week from the time it was taken. The second crop began to hatch on the tenth day from the time they first appeared.

Unfortunately, all the perfect insects of the first lot were lost; they were wholly black. Of the second lot some specimens accompany this paper. They all had yellowish legs, being conspicuously distinguished by these from the first to appear.

The first crop consisted of twenty-five to thirty-five cocoons; the second of upwards of fifty. It is worthy of remark that no visible mark or injury could be found under the glass at the points where the worms emerged from the surface of their host.

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TERIAS NICIPPE ON LONG ISLAND.

By Richard E. Kunze, M.D.

On Sunday morning, August 2d, this year, a rainy and threatening kind of a day, I started off with a small *Catocala* net, ovoid in shape and only 5 x 8 inches in respective diameters. A friend of entomological aspiration whom I met, went with me. After spending two hours inspecting many trees of Long Island City in vain, we started off in another direction, which brought us to the edge of a swamp and low meadows, the water of which empties directly into the East River. By this time the sun came out hot. I suggested to take in the swamp, part of which was good cow pasture with a solitary thistle—*Cnicum pumilum* here and there on rising ground. On thistles I took a few *Papilio asterias* and *troilus*, also sometimes *thysbe*. Lower down as far

as the wet meadow quantities of Hyssop—*Hyssopus officinalis*, Mountain Mint—*Pycnanthemum aristatum*, var. *hyssopifolium*, and Blue Vervain—*Verbena hastata*, were in bloom. Here I took many Pamphilæ, *Argynnis myrina*, a specimen of *Limenitis disippus* and a few *Colias philodice*, which swarmed around the plants of the mint family. All at once a—to me—very strange looking specimen with wings of a golden hue and of such contrast from the color of *Colias*, came out from the Alder bushes, that it attracted my attention at once. It had a jerky flight, like *Satyrus alope*, and gave me some work before I took it with that small net. Shortly after I started up another male of this same rare visitor and took the second *Terias nicippe*. About noon I saw a third male sipping moisture from the black mud along a cow path, and not wishing to soil the net, flushed it first, and, after a fruitless chase through mud and mire, lost it altogether, pursuit in that swamp of Alder—*Alnus serrulata*, being an impossibility.

Hungry and parched, we started homeward, and reaching high ground again, my companion, Mr. Louis Kohl, drew my attention to a very conspicuous white flowering shrub at a distance from us in another part of the swamp. Thither we started, and on the way, near edge of swamp, I saw for the first time the food-plant of the larva of *T. nicippe* in full bloom, which is American Senna—*Cassia marilandica*. With its masses of yellow, pea-flower shaped blossoms, it at first hid from my sight a female *T. nicippe*, which was inspecting its pinnate leaves in a fluttering, kind of a suggestive way. I gave the net to my friend and he took a perfect female at the first stroke of the net. We discovered no ova.

As we neared the white-flowering shrub, which proved to be Sweet-scented Pepperbush—*Clethra alnifolia*, we passed any number of *Cassia marilandica* from four to eight feet high, and which proved the centre of attraction of *T. nicippe*. These plants grew in submerged meadow land mostly along the edge of impassable jungle of *Rhus venenata*, *Alnus serrulata*, *Acer rubra* and a few *Clethra alnifolia*, intermingled with briars and the vines of *Clematis virginiana* and *Ampelopsis quinquefolia*. Most of these senna plants grew on the edge of a horseshoe-shaped piece of meadow, at the concave end of which stood the fragrant White Alder, or Pepperbush so called. This spot proved to be

the El Dorado of the day. Countless numbers of insects visited it, mostly Hymenoptera, some Lepidoptera, and a few Coleoptera. Here I took *Hemaris thysbe*, *Pyrameis huntera*, *Eudamus tityrus*, *Danais archippus*, *Lycæna pseudargiolus* and also missed a *Papilio*. But while busying myself with the aforementioned I was three times surprised by specimens of *T. nicippe*, all males, which tried to fly past me in making the circuit of that horseshoe. Of these I took one more specimen which was slightly injured. When chased they would fly straight for the bushes and disappear.

It was so submerged a locality that I had to cover the grass with an armful of Alder brush, and which did not prevent the soles of shoes from being out of water. Trying as this was, the most vexed circumstance happened after handing my net to Mr. Kohl, wishing him to take a *nicippe*, which flew hard by. He chased the beauty until he landed knee-deep in a meadow hole full of water. With an exclamation more vigorous than virtuous, he returned the net without the prize. During this exciting episode, and while admiring the many forms of insect life visiting the showy, white racemes which terminated every branchlet, much like that of Larkspur (*Delphinium*) of the Pepperbush—a very rare and swift flyer appeared and hovered over the fragrant blossoms for a few seconds only. It was *Aellopos titan*, feeding within three feet of my eyes, and I with no net at hand. It was twice the size of a large *H. thysbe*, had clear wings with a very dark or blackish border, and a body as stout as that of a Smerinthid. In my anxiety to take it, I put one foot forward with cyanide bottle in hand, when, like lightning, it disappeared as suddenly as it came. Other Macroglossids came, but no more *titans*. My friend afterwards took a fine male *Chrysophanus thœ*, feeding on the flowers of Hyssop, in close proximity.

August 8th I returned to same locality with my largest net and stood for two hours in a broiling sun taking specimens from that Pepperbush. While thus engaged three more male *T. nicippe* came around the horseshoe curve and were all taken. At exactly 1.30 P. M. *A. titan* struck the opposite and unapproachable side of the Pepperbush again. I heard but did not see plainly enough which intruder it was. After a very few moments I recognized the object plainly as it took its swift departure.

Sunday, August 16th, myself and young friend returned to that sweet-scented Pepperbush early in the day and took turns

watching it for rarities with nets of all sizes. Up to 1.30 P. M. took seven more fine specimens of *T. nicippe*, all flying close by to their food-plant (of the larva), and suggestive of their search for females. Of the whole number one, a female, was surprised examining the leaflets of *Cassia marilandica*. No ova were found. So much poison Sumach grew everywhere beside the Senna that I could not make a thorough search, it affects me with a fell virulence. My friend, Mr. L. Kohl, took a male *nicippe* out of that number on opposite side of swamps, where Hyssop was more plentiful than Senna bushes. There he captured another fine male of *Chrysophanus thœ*. The flight of *nicippe* is peculiarly low, a kind of zigzag sort of a way, which they persist in unless hard pursued. *S. alope* flies often higher, but otherwise not unlike this species of *Terias*. Three specimens, all males, made their escape that day, and with the exercise of a little more care there was no excuse that they got away except for the benefit of the species. Altogether, we captured fourteen specimens in Long Island City, all fresh looking and but one defective of the lot. No doubt exists in my mind that they were bred in this locality. It is reported that they have not been seen in large numbers since 1879 in this neighborhood.

Another word about *A. titan* and *Clethra alnifolia*. I watched from 11.30 A. M. up to 1.30 P. M. parched, sunburnt and mosquito-bit, gazing at the flowers of the White Alder and now past their prime, without having another glimpse of that southern Sphingid. I would advise all lovers of the flora and insect fauna to plant a sweet-scented Pepperbush in their garden. Although naturally found in swamps, it thrives well in any garden soil with sufficient sun and water to develop its growth. Most of the nurserymen have it on sale, and it will repay any naturalist for the trouble of cultivating this charming plant. In swamps it attains a height of eight feet, in gardens from four to five, and remains in full bloom for nearly five weeks. Its fragrance is widespread and delicious.

WHISKY IS BUG JUICE.—Peoria, Ill., September 24th. The Distillers and Cattle Feeding Company has been experimenting with the Takamine or Japanese process of making whisky. The distillers are so well pleased that they have decided to fit up the Manhattan Distillery with new machinery. The new plan greatly reduces the cost of manufacture. A queer feature is that a species of bug found on the rice is used instead of yeast for the fermenting process.—*Philadelphia Record.*

A NEW PAMPHILA.

By HENRY SKINNER, M. D., Philadelphia.

P. panoquinoides n. sp.—Expands one inch. Color brown. Superiors have two minute fulvous spots on the subcostal nervules and a larger spot in the disc below these. Inferiors immaculate. Underside.—Superiors are same color as above, but of a lighter shade, with a patch of fulvous scales about one-eighth inch from base; the spots seen above are repeated, and there are two additional ones. One of these is V-shaped, and is the largest and situated between the first and second median nervules. The last spot is near the middle of the interior margin. The inferiors have a row of three white spots near the centre of the wing; they are half as wide as long. Head, thorax and abdomen same color as wings above, lighter beneath. Described from specimens from Key West, Fla. and Texas in the collection of I. C. Martindale, Esq. This species in color and size may be said to stand between *P. panoquin* and *P. fusca;* being smaller and darker than *panoquin* and larger and lighter than *fusca*. Approaches *panoquin* nearer than any other species, but has fewer and more indistinct markings. Looks very much like *panoquin* beneath.

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On the Genus Anæa Hb. (Paphia Westw.) of Our Country.

By B. NEUMOEGEN, New York.

There is evidently some misunderstanding about the classification of the two species of *Anæa* found in this country. W. H. Edwards, Prof. Scudder and Riley, and other authors have written on it, but the questions have never been satisfactorily settled.

According to W. H. Edwards' "Revised Catalogue," 1884, p. 45, *A.* (*paphia*) *troglodyta* Fabr.

= *astianax* Cr.
= *glycerium* Edw. (nec. Doubl.)
= *andria* Scud.

is found in our Western States, from Illinois to Texas and Neb.

I will herewith prove that the typical *troglodyta* is an insect flying in the Antilles, and that our species should correctly bear the name of *andria* Scud.

Dr. John Gundlach, who is an expert on the Lepidoptera of the West Indies, especially of Cuba and Puerto Rico, has sent

me, repeatedly, in the last fifteen years, specimens identified by him as *troglodyta* Fabr. Dr. Staudinger received of the same specimens, which always proved to be uniform in coloring and appearance, and likewise determined them as *troglodyta* Fabr. Kirby, in his Catalogue, p. 276, gives "Jamaica" as the home of *troglodyta*. In 1888, Dr. Staudinger published that incomparable and beautifully illustrated work entitled, "Exotic Lepidoptera," by Dr. O. Staudinger and Dr. E. Schatz. Rhopalocera by Dr. Staudinger." On pages 177 and 178 of this work, referring to the revision of the genus *Anæa* by Druce, in the "Proceedings of the Zoological Society of London," 1877, Dr. Staudinger says the following :

"The genus *Anæa* is found throughout the whole dominion of the neotropical fauna from Southern Brazil to Mexico and the Antilles, one species even flying in the Southwestern States of the American Union, from Illinois to Texas. The American authors call it *troglodyta* Fabr. If *astianax* Cr., which is always given as a synonym of it, really belongs to it, then it is a similar species, exclusively flying in the Antilles, and this is the reason that Scudder, in 1875, named the North American species *andria* (= Ops. Druce, p. 177, 1877)."

On p. 178 he says:

"In Jamaica is found *A. troglodyta* Fabr., which I received directly from there, as well as from Sommer's collections from Hayti (Port au Prince) and Sta. Cruz. One specimen out of the collection of v. Schenck is marked 'Mexico,' but surely did not come from there, but from the Antilles. This *troglodyta* has a long-drawn, sharply-pointed apex of primaries, and the secondaries sharply dentated from anal angle to tail. The brown primaries in both sexes show beyond the centre a black, dentated, transverse line, and a darker marginal band. *A. andria* Scud. (= Ops. Druce, *troglodyta*, Edwards and Strecker) from the United States, resembles this insect, but the male does not show the transverse line; the female has it, but is in many ways different from *troglodyta*. *A. portia* Fabr., which I possess from Sommer's collections in Hayti (Domingo), as well as from Cuba, I cannot, according to the specimens which I possess, separate as a species from *troglodyta*, although the black transverse line of the male is nearly extinct. According to the descriptions of Fabricius, who gives as habitat of both species 'America,' there

is a slight possibility that *portia* may be the Antilles form and *troglodyta* the North American, but it can never be decided with certainty."

Now, according to what Dr. Staudinger, Dr. Gundlach, W. F. Kirby and Druce, all good authorities, say, on this point, the home of *troglodyta* is the Antilles, and our North American representative is a different insect, which should bear the name of *andria* Scud.

I, for my part, can only add that on a first, even superficial glance, every body can at once see that the West Indian insect *troglodyta* is entirely different from ours. A bright, reddish brown color well marked, transverse lines and bands, the anal part of margin of secondaries, well scalloped and longer tails, show it conclusively.

A. Morrisonii Edw., of which I possess the types, is nearer to *troglodyta* than *andria*, but a smaller insect, of duller brown, and with slight indications only of the transverse line of primaries.

All the European authors have adhered to the name of *Anæa* Hüb., instead of *Paphia*, and I do not see why we should not follow in their footsteps. I, therefore, propose that in the new Check List of North America Lepidoptera the names stand:

Anæa Hüb.

andria Scud.
= *glycerium* Edw. 1871 (nec. Doubl.).
= Ops. Druce, 1877.
Western States, Illinois to Nebraska.

Morrisonii Edw.
Arizona, Mexico.

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ELEMENTARY ENTOMOLOGY.

In studying Lepidoptera it is necessary to have a knowledge of certain anatomical details which can only be learned from inseption and dissection of the specimens themselves. The classification is based on the difference in structure of various parts—as the head, body, legs, antennæ, and venation of the wings. Slight changes in these parts separate them into families, genera and species. Size and coloration are also taken into account, and are good characters, although subject to individual variation.

The Rhopalocera, or Diurnals, are divided into four families: the Nympalidæ, Lycænidæ, Papilionidæ and Hesperidæ. The first family mentioned is the most extensive one, containing the greatest number of species. The butterflies in this family may be distinguished from the others by the structure of the front legs in both sexes, which, on examination, will be found to be aborted or atrophied. The chrysalids of the butterflies of this family are suspended by the tail and hang downward. "Although other families contain butterflies which vie with the Nymphalidæ in lustrous beauty, this largest family contains upon the whole by far the greatest number and variety of striking forms, whether we consider the butterfly, the egg, the caterpillar, or the chrysalis. Moreover, they are the forms which are most commonly seen and noticed by those who have but a popular interest in natural history, for they are the butterflies *par excellence* of the temperate zone, of the region where civilization has most flourished and the praises of Nature have been most sounded by the poets. It is from the transformation of this group of butterflies that ancient mythology has drawn inspiration. The very name chrysalis, the 'golden thing' of the Greeks, was drawn from observation of this family, where alone the pupa often assumes a golden hue. And it is not strange that they should have so observed them, for of all butterflies these are the most spritely and vivacious, the most audacious, most fond of propinquity to man and his cultivations. and endowed with most varied psychological traits."*

The Nymphalidæ are divided into four subfamilies: the Satyrinæ, Euplœinæ, Nymphalinæ and Libytheinæ. These further divisions are characterized as follows: In the Satyrinæ some of the nervures of the forewings are swollen at the base, and the palpi are slender, compressed, heavily fringed with long scale-hairs. In the Euplœinæ none of the nervures are swollen; palpi rather stout, not greatly compressed, the fringe slight, short and delicate; antennæ naked. The Nymphalinæ have the palpi not so long as the thorax; fore legs of both sexes atrophied and imperfect. In the Libytheinæ have the palpi much longer than the thorax; fore legs of male atrophied, of female normal, except in being shorter than the others. The family Lycænidæ is made up of small and delicate butterflies of generally bright color and

* Butterflies of the Eastern United States and Canada.—S. H. Scudder.

delicate wings. The structure of the fore legs this family stands midway between the Nymphalidæ and the Papilionidæ. The fore legs of the female are always perfectly formed, though usually slightly smaller than the middle pair; while those of the male are always more or less atrophied, yet never to the extent that prevails among the Nymphalidæ. The family Lycænidæ is divided into two subfamilies: the Lemoniinæ and Lycæninæ. The Lemoniinæ are distinguished by having the labial palpi minute, only the minute apical joint surpassing the face; fore wings provided with a distinct internal nervure; hind wings scarcely channeled to receive the abdomen, furnished with a precostal nervure, the costal nervure only running to the middle of the costal margin; fore tarsi of male, with rare exceptions, without spines or claws. The Lycæninæ have the labial palpi well developed, porrect, half or more of the middle joint surpassing the face; fore wings with excessively brief, hardly perceptible, internal nervure; hind wings channeled on basal half to receive the abdomen, without a precostal nervure, the costal nervure running nearly to the end of the costal margin; fore tarsi of male armed abundantly beneath and at tip with spines. [This article is largely made up from the excellent treatise on classification in Scudder's "Butterflies of the Eastern United States and Canada."]—ED.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

[The Conductors of ENTOMOLOGICAL NEWS solicit, and will thankfully receive items of news, likely to interest its readers, from any source. The author's name will be given in each case for the information of cataloguers and bibliographers.]

In the future all papers received for publication in the News will be printed according to date of reception.

THE following may perhaps be of interest to the readers of the ENTOMOLOGICAL NEWS, especially to any such as are particularly interested in the Dragon Fly and its life habits. It is concerning the time required for the nymph forms of the larger species of *Æschna* to mature. According to all the writings by entomologists to which I have had access, little is definitely known about this part of the subject. Some of them, and among them Packard claims that two or three years is required for the growth of the nymph from the time it hatches from the egg until the winged form appears. During the past Summer I had an opportunity to settle this

point as far as the species *Anax junius* is concerned. In Franklin Park, in this city (Columbus, O.), a small lake was dug last Winter in a place which was before entirely dry and well drained, and during the last of April and the first of May this lake was filled with water from the city water-works pipes, which I am sure contain do dragon fly nymphs; and on the 30th day of August last, the shores of this artificial lake were literally lined with the exuvia of *Anax junius* nymphs; so they could not have been older than four months at the utmost. I saw the first *Anax junius* flying in the last week of April, and I think I am safe in saying that none appeared much earlier, as I was on a special lookout for them.

PAUL FISCHER, Columbus, O.

CANNIBALISTIC HABITS OF THE CRICKET.—In the "Canadian Entomologist," vol. xxiii, p. 137, Mr. Wm. Brodie cites several cases of cannibalism that came under his notice. My attention was first called to the cannibalistic habits of the cricket some four years ago while bass fishing in the upper Delaware River. Wishing to make an early start, I had taken the precaution to secure my bait the evening previous; part of the bait consisted of about fifty large crickets, which I placed in a good-sized tin-box; the next morning I was surprised to find only thirty-five live crickets in the box, with the legs, heads and other hard parts of the missing fifteen. The day selected for fishing turned out to be a rainy one, so our trip was postponed; the box of crickets was laid aside, and the next morning on examining the contents of the box I was not surprised to find about ten more missing. I now determined to use the remaining crickets for an experiment; I kept the box in my room, and on several occasions on approaching the box very carefully and peeping in, I would be rewarded for my trouble by sights of cannibalism. In a week or ten days I removed the contents of the box, which consisted of some eight or ten large, fat crickets, and an innumerable mass of legs, heads and other hard parts of crickets. In this case it was no doubt the survival of the fittest (or fattest), the stronger overcoming the weaker.—PHILIP LAURENT.

INSECTS BLOCK THE TRACK.—Syracuse, N. Y., May 31st. South of Brighton Corners, between this place and Jamesville, on the D., L. and W. R. R. are extensive limestone quarries, which have been in operation for many years, and have penetrated deeply into the rock. Through the cut thus made, and into the quarries a branch track has been laid from the Lackawanna road for the accommodation of the hewn stone. Night work being necessary, a large part of the time, an arc light has been placed high over the track at the darkest part of the cut.

Several cars were loaded with stone for shipment on Friday and left on the switch, pending the observation of Memorial Day. To-night, in preparation for drawing the cars out, the electric light was cut in and an engine with the necessary crew left from the city for the quarries. Upon reaching the cut the track was found to be covered for sixty feet on either side with strange insects of immense proportions. The swarm was so great that the engine became stallen, the rails having become so slippery

from the crushed insects. Examination of the new insects shows a resemblance to what is known as the electric light bug, though the new comer is much larger.

The outer shell of the back is about the size and shape of half an egg-shell, which, when crushed by the engine wheels, gave out a crackling sound like the explosion of a toy torpedo. The shell is black, of a slatey structure and very brittle. It is supposed to be a species of lithedome—a rock-boring mollusk—crossed with some kind of predatory insects.

To secure the shipment of the freight to-night it became necessary to let the loaded train from above in the quarry come down the grade of the cut. Gathering momentum all the time, its impetus, when it came to the obstruction, carried it by the bugs.—*Boston Daily Traveller.*

SPRAYED GRAPES ARE HARMLESS.—Albany, September 29th. State Entomologist, John A. Lintner, regards the recent activity of New York City's Board of Health as misdirected, and thinks the grape growers and dealers whose grapes were seized and condemned, have a good cause of action against the health officers. He declares that the grapes were not poisoned, and those having the most suspicious spots could have been dipped in a solution of water and vinegar and thoroughly cleansed.

Prof. Lintner says that last Winter he met the grapegrowers of the Hudson Valley, and together they discussed the best methods of killing insects that infest grape-vines, and decided in favor of this Bordeaux mixture. Its only bad feature was that it clung to the grapes after maturity. The mixture contains copper, but in such minute quantities that a person would have to eat a ton of grapes to get enough poison in his system to kill him. Hence he considers the wholesale destruction of the grapes in New York City as foolish in the extreme and not warranted by any consideration for the public health.—*Evening Star.*

"IN NATURE," notes Mr. R. T. Lewis, on the authority of a correspondent in whose trustworthiness he has entire confidence, gives a curious account of the appreciation with which the song of the *Cicada* is heard by insects other than those of its own genus. The correspondent has frequently observed in Natal that when the *Cicada* is singing its loudest, in the hottest portion of the day, it is attended by a number of other insects with lovely gauze-like, irridescent wings, whose demeanor has left no doubt on his mind that the music is the attraction. The *Cicada*, when singing, usually stations itself upon the trunk of a tree with its head uppermost, and the insects in question, to the number sometimes of fifteen or sixteen, form themselves into a rough semicircle at a short distance around its head. During a performance one of the insects was observed occasionally approach the *Cicada* and to touch it upon its front leg or antennæ, which proceeding was resented by a vigorous stroke of the foot by the *Cicada*, without, however, any cessation of its song. The insects composing the audience are extremely active; and so wary that they take flight at the least alarm on the too near approach of any intruder. Some of them, however, have been captured; and on examination these proved

to belong to the same family as that most beautiful of British insects—the lace-wing fly, which, indeed, they closely resemble, except as to size, their measurement across the expanded wings being a little over two inches; they have since been identified by Mr. Kirby at the British Museum as *Nothochrysa gigantea*.

THE PLAGUE OF LOCUSTS IN ALGERIA.—Sir Lambert Playfair in his last report on Algerian agriculture remarks on the spread of locusts from the eastern part of the province, to which they had hitherto for the most part confined their ravages, to the central regions. Until the eminent entomologist, D'Herculais, studied the matter carefully, no specific distinction amongst the locust was recognized. He has now shown that there are two species, belonging to separate genera, each of which has very marked peculiarities. These are, the best known or the Biblical species, *Acridium peregrinum*, and the *Stauronotus maroccanus*. Their habits are quite different; the former generally arriving suddenly about April or May, in immense flights, and devastating the green crops. The females penetrate deeply into the moist earth and deposit their eggs, from 80 to 90 in number, enclosed in a cocoon. Two months afterwards the young locusts or crickets are hatched; they grow rapidly, get their wings in 45 days, and then continue their career of devastation far in advance. The other species appear in a winged state in July and August; they also ravage what green exists at that season, and the females deposit their eggs at a much less depth than the others, generally on rocky ground. The cocoons do not contain more than 30 or 40 eggs, and they remain without being hatched till the Spring of the following year. The first species finds in Central Africa the most favorable circumstances for its development; the second, in more temperate countries, such as the Mediteranean region, and even the Caucasus, Crimea and Asia Minor. It is the latter that has ravaged Algeria during the last few years, but about the middle of December last the arrival of flights of the *Acridium* was reported from several of the oases of the extreme south.

Fortunately, man is not the only enemy of the locust. Starlings and Larks feed eagerly on the eggs; wagon-loads of these birds used constantly to be sent to the French market, but now the killing of them has been prohibited in the province of Constantine. The larvæ of the *Bombyx cantharis* and other insects, also get into the cocoons, and often kill from ten to fifty per cent. of the eggs, while minute cryptogamic organisms destroy many more. The best method of contending against the locust has been very carefully studied. Much has been accomplished by ploughing the ground deeply as soon as possible after the eggs have been laid, so as to bring them to the surface, and thus allow them to become an easy prey to birds and insects.

Identification of Insects (Imagos) for Subscribers.

Specimens will be named under the following conditions: 1st, The number of specimens to be unlimited for each sending; 2d, The sender to pay all expenses of transportation and the insects to become the property of the American Entomological Society; 3d, Each specimen must have a number attached so that the identification may be announced accordingly. Address all packages to ENTOMOLOGICAL NEWS, Academy Natural Sciences, Logan Square, Philadelphia, Pa.

Entomological Literature.

LEPIDOPTERA HETEROCERA in the British Museum part 8.—Illustrations of typical specimens of Lepidoptera-Heterocera in the collection of the British Museum. The Lepidoptera-Heterocera of the Nilgiri district, by George Francis Hampson, 144 pp. plates 139 to 156. These are fine colored lithographic plates, and contain many figures.

THE ANNALS AND MAGAZINE OF NATURAL HISTORY, vol. viii, No. 45. —Descriptions of two new species of Lycænidæ from West Africa, in the collection of Mr. Philip Crowley, by Emily Mary Sharpe.

MEMOIRS AND PROCEEDINGS OF THE MANCHESTER LITERARY AND PHILOSOPHICAL SOCIETY, 1890-91.—Hymenoptera Orientalis; or, Contributions to a knowledge of the Hymenoptera of the Oriental zoological region, by P. Cameron.

JOURNAL OF THE ASIATIC SOCIETY OF BENGAL, vol. lix, pt. 2, Suppl. No. 2.—Catalogue of the Insecta of the Oriental region. No. 4, Order Coleoptera, Families Dytiscidæ, Gyrinidæ, Paussidæ, Hydrophilidæ, Silphidæ, Corylophidæ, Scydmænidæ, Pselaphidæ, Staphylinidæ. Vol. lx, part 2, No. 1. A list of butterflies of Engano, with some remarks on the Danaidæ, by William Doherty, Cincinnati, U. S. A. New and rare Lycænidæ, by William Doherty.

THE REPORT OF THE STATE HORTICULTURAL ASSOCIATION OF PENNSYLVANIA contains "A pen sketch (with portrait) of Dr. S. S. Rathvon, Professor of Entomology," by T. W. Goding, Rutland, Ill.

ON A BACTERIAL DISEASE by S. A. Forbes, Ph. D. (reprint from the "North American Practitioner," September, 1891.) The paper describes the internal anatomy of the chinch bug *Blissus leucopterus*, and gives an account of the *Micrococcus insectorum* which is found in the alimentary canal. This subject of bacterial disease is a very interesting and important one not only to the economic entomologist, but to the general bacteriologist.

LE NATURALISTE (Paris), Sept. 1, 1891.—Some different galls produced by Acarines on vegetables, by M. Menegaux, figs. Description of a new *Hecatera*, by P. Dognin.

BULLETIN OF THE OHIO AGRICULTURAL EXPERIMENT STATION, vol. iv, No. 5.—This contains an article on the wheat midge, *Diplosis tritici* Kby., by Prof. F. M. Webster. Figures are given of the insect, its stages and anatomy, and a complete history of its ravages, etc., in various parts of the country.

INDEX TO THE KNOWN FOSSIL INSECTS OF THE WORLD, including Myriapods and Arachnids, by Samuel H. Scudder.—This is Bulletin of the U. S. Geological Survey, No. 71. This is a large work of 744 pages, and the author states that he believes it to be practically complete, and says: "With the view of furthering study in the too neglected field of fossil insects, I transmit for publication the card catalogue of described fossil insects which I have used for twenty years, and kept constantly up to date." The great value of this book as a work of reference can be seen at a glance, and all workers in this field as well as entomologists in general, are indebted to Mr. Scudder, whose industry and talent as a writer are phenomenal.

BULLETIN DE LA SOCIETE PHILOMATHIQUE DE PARIS (8), III, 3, 1891.—Patellary Glands of Araneids, by P. Gaubert.

REVUE BIOLOGIQUE DU NORD DE LA FRANCE (Lille), September, 1891.—On the presence of *Cecidomyia sisymbrii* Schk. at Chinon, by Dr. H. Fockeu.

JOURNAL DE L'ANATOMIE ET DE LA PHYSIOLOGIE NORMALES ET PATHOLOGIQUES, etc., xxvii. 3, Paris, 1891.—Abstract genealogy of Arthropods: Determination of the typical forms, (concluded), by A. Segond

ZEITSCHRIFT FUR WISSENSCHAFTLICHE MIKROSCOPIE UND FUR MIKROSCOPISCHE TECHNIK, viii, 2, Braunschweig, 1891.—Methods in embryological researches on insect eggs, by Dr. H. Henking.

COMPTE RENDU. SOCIETE ENTOMOLOGIQUE DE BELGIQUE, Aug. 1, 1891.—List of the Carabidæ (order Coleoptera) obtained by Pere Cardon in Bengal, and chiefly from Chota-Nagpore,* by H. W. Bates. Contributions to the Belgian fauna (Hemiptera, Coleoptera), by A. J. F. Fokker. Dichotomous tables for the determination of the Belgian species of Coleoptera Heteromera, by L. Coucke.

BULLETIN DE LA SOCIETE LINNEENNE DE NORMANDIE (4), v, 2, Caen, 1891.—The *Anthonomus* of the apple tree, by E. Lecoeur; 1 pl. The use of tarred bands against the caterpillars of *Chematobia*, id.

ARCHIV FUR NATURGESCHICHTE, lvii, I Bd., 2 heft, Berlin, July, 1891.—The sound apparatus of the Dytiscidæ, by H. Reeker; 1 pl. Description of a hermaphrodite Arthropod, by Dr. P. Bertkau; 1 pl. (a *Lycosa*).

IL NATURALISTA SICILIANO (Palermo), August and September, 1891.—Catalogues of the Coleoptera of Sicily,* by E. Ragusa.

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* Contains new species other than North American.

LE NATURALISTE (Paris), No. 110, Nov. 1, 1891.—The tertiary insects of North America from the works of M. Scudder, by Dr. E. Trouessart. The wandering cricket, *Acridium pelegrinum* (concluded), by C. Brongniart.

JAHRESHEFTE DES VEREINS FUR VATERLANDISCHE NATURKUNDE IN WURTTEMBERG, xlvii, Stuttgart, 1891.—On some *Thrips* injurious to grain, by Dr. E. Hofmann. Roser's Hemipterous fauna of Wurttemberg, published by Dr. T. Hueber.

ANALES DE LA SOCIEDAD CIENTIFICA ARGENTINA, xxxii, No. 1, Buenos Ayres, July, 1891.—*Dyscophus onthophagus*, a new cavern-dwelling cricket from Uruguay, by Dr. C. Berg, No. 2, August, 1891. Argentine Dipterology (Syrphidæ), by F. L. Arribalzaga (to be continued).

DEUTSCHE ENTOMOLOGISCHE ZEITSCHRIFT, JAHRGANG 1891, 1 heft, Berlin, June, 1891.—A new Lucanid of the group Cladognathidæ from Java,* On *Sclerostomus fasciatus* Germain, by G. Albers. Description of the larva and the female of *Homalisus suturalis*, by Dr. P. Bertkau; 1 pl. *Cochliophorus* nov. gen. of Meloidæ,* by K. Escherich. List of the Snout Beetles collected near Djizak, Tschimkent and Nauka,* by J. Faust. [Additions] to the list of German beetles,* by K. Fuegner. Collecting notes for 1890, by J. Gerhardt (Coleoptera). Rectification of the hitherto described species of *Castalia*, by Dr. K. M. Heller; *Microcastalia* n. g. Remarks on Herr Wilkins' work on the Cicindelidæ of Turkestan, by W. Horn. *Cicindela inscripta* Zoubk. new to Europe, *Cetonia floricola* var. *Fausti*, *Smaragdesthes subsuturalis* n. sp. from Congo, *Ptyllopertha humeralis* n. sp. from Asia Minor, On the Greek *Trichophorus Schaumi* Cand., On *Diacanthus sulcatus* Cand. from Silesia, On the African Cetonid genus *Stethodesma* Bainbr., On *Tmesorrhina concolor* Westw. and allied species,* On A. Kuwert's Identification table of European Coleoptera, xxii, heft, Heteroceridæ, On the genus *Kraatzia* Fel de Saulcy, The varieties of *Trichius rosaceus* Voet., *T. gallicus* Heer, *T. fasciatus* L., all by Dr. G. Kraatz. Systematic review of the species and genera of Passalidæ, by A. Kuwert. New Coleoptera from Europa, the surrounding countries and Siberia, with remarks on known species, twelfth part, The true Cetonid genera and the species known to me from Europe and the surrounding countries,* by E. Reitter. *Leistus elegans* n. sp.,* by C. Rost. Supplement to the Thuringian beetle fauna, by C. Schenkling. Sixth contribution to the knowledge of the German beetle fauna, by J. Schilsky. Revision of the palaearctic species of the Elaterid genus *Agriotes* Eschsch.;* 2 plates, Two new Elaterids from Syria and Madagascar, by O. Schwarz. A new East African Cicindela, by A. Srnka. *Brumus trivittatus* n. sp. from the Suaheli coast, *Trachodius tibialis* n. sp. from Macugnaga, Known and new Chrysomelidæ from Spain I, How many species does the genus *Sclerophædon* contain?, On varieties of *Phytodecta*, all by J. Weise.

* Contains new species other than North American.

ENTOMOLOGISCHE NACHRICHTEN, xvii, 17, Berlin, September, 1891.—*Osmia* studies,* by H. Friese; figs. Two new South American Libellulidæ, by Dr. F. Karsch; *Platyplax* n. gen. *Pimpla* species from Norderney and three new varieties,* by C. Verhoeff. No. 18, Sept. 1891. Criticism of the system of the Aeschnidæ,* Dr. F. Karsch.

LE NATURALISTE (Paris), Sept. 15, 1891.—Description of a new Lepidopter,* by P. Dognin.

SPECIES DES HYMENOPTERES D'EUROPE ET D'ALGERIE FONDE PAR EDMOND ANDRE ET CONTINUE SOUS LA DIRECTION SCIENTIFIQUE DE ERNEST ANDRE, 39e Fascicule, July 1, 1891, forming pp. 1–88 of tome vi, Chrysides,* by Robert du Buysson; 2 plates. 40e Fascicule, Oct. 1, 1891, forming pp. 57–136 of tome v; 2 plates.

ARCHIVES DE ZOOLOGIE EXPERIMENTALE ET GENERALE, 2e Serie, ix, 3, Paris, 1891.—Studies on the blood and the lymphatic glands in the animal series (second memoir), by L. Cuenot; plates. This memoir includes the insects.

BULLETINS DE LA SOCIETE ZOOLOGIQUE DE FRANCE (Paris), xvi, No. 1, January, 1891.—An error of the senses in a Lepidopter, by Dr. R. Blanchard.—No. 2, February. On the Pseudo-parasitism of the larvæ of *Culex pipiens*, by Dr. R. Blanchard. New or little-known Diptera [*Hæmatopota*], by J. M. F. Bigot.—No. 4, April. List of the Arachnids collected by M. Ch. Rabot in western Siberia in 1890, and Descriptions of some Arachnids from Costa Rica from M. A. Getaz, of Geneva, by E. Simon; *Cupiennius* n. g.—No. 6, June. Descriptions of two new species of Arachnids collected by Dr. R. Blanchard in the Sahara,* by E. Simon.

MEMOIRES DE LA SOCIETE ZOOLOGIQUE DE FRANCE, iv, 1, 2, 1891.—Coleoptera collected in the Azores by M. J. de Guerne during the voyages of the yacht "Hirondelle" (1887–88), by C. Allaud.

MEMOIRES DE LA SOCIETE DES SCIENCES PHYSIQUES ET NATURELLES DE BORDEAUX, 3e Serie, v, 2, 1890.—Hermann Mueller and the coloration of the collecting apparatus of bees, by M. J. Perez.

NOUVELLES ARCHIVES DU MUSEUM D'HISTOIRE NATURELLE (Paris), 3e Serie, II, 2, 1890.—The collection of insects formed in Indo-China by M. Pavie, French consul at Cambodia: I Coleoptera, Cebrionidæ, Rhipidoceridæ, Dascillidæ,* and Malacodermidæ,* by M. J. Bourgeois; Clytidæ* and Eumolpidæ,* by E. Lefevre; Diptera,* by J. M. F. Bigot.

ATTI DELLA R. ACCADEMIA DELLE SCIENZE DI TORINO, xxv, disp. 9a, 1889–90.—Diagnoses of some new species of Diptera,* by Dr. E. Giglio-Tos.

ENTOMOLOGISCHE NACHRICHTEN, xvii, No. 19, October, 1891.—List of the Sphingidæ collected by Dr. Paul Preuss at Barombi Station in Cameroon,* by Dr. F. Karsch; 1 plate. Tryphonid studies,* by Dr. Kriechbaumer.

* Contains new species other than North American.

ZOOLOGISCHER ANZEIGER (Leipzig), Aug. 31, 1891.—On the embryology of insects, by V. Graber.

MORPHOLOGISCHES JAHRBUCH (Leipzig), xvii, 3, 1891. On the morphological significance of the ventral abdominal appendages of insect embryos, by V. Graber; figs.

VERHANDLUNGEN DER K. K. ZOOLOGISCH-BOTANISCHEN GESELLSCHAFT IN WIEN, xli, Bd., I Quartal. April, 1891.—Additamenta to the monograph of the Phaneropteridæ,*† by C. Brunner v. Wattenwyl; 2 plates; a paper of 196 pages, describing many new genera and species. On noteworthy forms among Acarids,* by Dr. L. Karpelles, 6 zincographs.

COMPTE RENDU. SOCIETE ENTOMOLOGIQUE DE BELGIQUE, Sept. 5, '91.—Curculionidæ and Brenthidæ from western Bengal, collected by R. P. Cardon, with descriptions of new species,*† by M. J. Desbrochers des Loges. Melanges Entomologiques: V. Diagnoses of Coleoptera from the Congo.*† VI. Diagnoses of Phytophaga from Madagascar,* by A. Duvivier. Third Dichotomous table to aid in determining Belgian species of Coleoptera Heteromera, by L. Coucke.

XXXVI UND XXXVII BERICHT DES VEREINS FUR NATURKUNDE ZU KASSEL, 1891.—Lepidopterology: On the local fauna of Cassel and vicinity, by L. Knatz. Observations on the development history of *Coleophora gryphipennella* Hbn., by Dr. H. F. Kessler. The development history of *Tribolium ferrugineum* Fab., ibid.

VERHANDLUNGEN DES VEREINS FUR NATURWISSENSCHAFTLICHE UNTERHALTUNG ZU HAMBURG, 1886–90. Hamburg, 1891.—Contributions to fauna of the lower Elbe: New and rare beetles, by T. Wimmel and R. Niemeyer; On beetles imported with drugs, by T. Wimmel; Additions to the list of macrolepidoptera of the lower Elbe, by J. C. H. Zimmermann; On the occurrence of *Panthea cœnobita* in this locality, by H. Burmeister; On *Plusia illustris*, by R. Schmidt; My prey at Eulen in 1890 [Lepidoptera]. by G. Jaeschke; Additions to the Lepidopterous fauna of the lower Elbe, by A. Saúber; The Lepidopterous fauna of Horn and vicinity, by A. Junge; Entomological brevities [Lepidoptera], ibid.

Doings of Societies.

A REGULAR STATED MEETING OF THE ENTOMOLOGICAL SECTION OF THE ACADEMY OF NATURAL SCIENCES was held Sept. 24, 1891, at the hall S. W. cor. Nineteenth and Race Streets, Dr. Horn, Director, presiding. Meeting called to order at 8.20 P.M. Members present: Martindale, Cresson, Welles, Ridings, Skinner and Laurent. Associates: Bland, Seeber, Westcott, Fox, Liebeck, Johnson, Dr. Castle and Haimbach. Mr. Martindale spoke of the great scarcity of Lepidoptera during the past

* Contains new species other than North American. † Contains new genera.

Summer, both in the field and at the electric lights. He had caught two specimens of *Terias nicippe* and a female of *Pamphila campestris* in Fairmount Park. Both of these species are rare here, the latter being exceedingly rare. Dr. Castle stated that he had visited his old locality for *Blaps similis* at Alexandria, Va., and had not found any owing to trenches having been dug in the immediate neighborhood and filled with boiling water. Mr. Welles had found *Lycomorphus pholus* very abundant at Elwyn, Delaware County, Pa. Dr. Skinner exhibited the insects collected by Mr. Mengel and Dr. Hughes on the west coast of Greenland. There were about 25 specimens of Hymenoptera, 166 Diptera, 8 Coleoptera, 106 butterflies and 143 moths. Mr. Seeber exhibited and presented 260 Hymenoptera, 65 Diptera and 2 Neuroptera, all taken in and around the city. He had found that in using a cyanide bottle that constantly opening it greatly deteriorated its killing qualities, and in the future he intended to try ether, as he could then replenish the killing bottle with ether when necessary. Dr. Horn said that his work on *Agrilus* was finished, and he exhibited all the known species of our faunal limits, 54 species all told, 22 of which were described as new. He had dealt with but one unique; most species were exceedingly well represented. They are readily separated into groups by pretty good characters. Some of the characters noted and described were new. He also stated that he had recently been studying *Amara* and some other things. Mr. Westcott spoke of the good luck he had had in collecting moths at sugar, etc., but had found diurnals very scarce. Mr. Nathan Banks, of Washington, was proposed as an associate of the Section.—H. SKINNER, *Recorder*.

OBITUARY

EDWARD W. JANSON, died in London, Sept. 14, 1891, aged 69. He was especially known to entomologists as a dealer in insects, boxes and appliances. While he possessed skill and judgment as an entomologist, he has written but little, preferring to devote his talents to the assistance of others. He possessed what is probably the best collection of Elateridæ known, having acquired the first typical series from Dr. Candéze by purchase. His library was very full, and was especially rich in pamphlets.

ENTOMOLOGICAL NEWS for October was mailed September 29, 1891.